

14°, 69°; Fort Sill, 20°, 72°. Arkansas, Mt. Ida, 10°, 68°. Tennessee, Austin, 14°, 70°; Spring Garden, 16°, 72°. Kentucky, Danville, 12°, 63°; Louisville, 26°, 67°. Ohio, Westerville, 12°, 66°; Toledo, 24°, 59°; Jacksonburg, 27°, 72°. Indiana, St. Mary's Home, 12°, 72°; St. Meinrad, 17°, 74°. Michigan, Escanaba, 10°, 45°; Alpena, 12°, 50°; Grand Haven, 25°, 61°. Wisconsin, Neillsville, —4°, 55°; Beloit, 13°, 64°. Illinois, Elmira, 10°, 62°; Chicago, 23°, 66°; Martinsville, 26°, 75°. Missouri, Corning, 3°, 66°; St. Louis, 21°, 69°. Iowa, Vail, —11°, 60°; Keokuk, 21°, 65°. Minnesota, Breckenridge, —10°, 49°; St. Paul, 10°, 56°. Dakota, Fort Pembina, —4°, 49°; Bismarck, 2°, 56°; Yankton, —1°, 52°. Nebraska, Sydney Barracks, —17°, 69°; Emerson, 6°, 64°. Kansas, Fort Hays, 4°, 62°; Leavenworth, 13°, 67°; Stanley, 20°, 76°. New Mexico, Fort Union, —6°, 57°; Santa Fe, 2°, 52°. Colorado, Pike's Peak, —26°, 30°; Fort Lyon, —10°, 63°; Colorado Springs, —2°, 69°. Wyoming Territory, Fort Sanders, —38°, 60°; Cheyenne, —10°, 64°. Montana, Idaho, Oregon, Washington Territory and Arizona reports missing. Utah, Salt Lake City, 8°, 51°. Nevada, Winnemucca, —1°, 57°. California, Fresno, 28°, 69°; Visalia, 31°, 68°; Red Bluff, 32°, 66°; Alcatraz Island, 40°, 69°; Salinas City, 33°, 69°.

Ranges in Temperature.—The monthly ranges will appear from an inspection of the minimum and maximum temperatures just given. The smallest ranges are found at the stations along the immediate coasts and lakes; the largest, in the interior, especially from Colorado and Wyoming to western Minnesota. *Daily.*—In New England, they vary from 19°, least, at Wood's Holl to 31°, greatest, on Mt. Washington. Middle Atlantic States, from 19° at Sandy Hook to 32° at Lynchburg. South Atlantic States, from 22° at Charleston to 37° at Augusta. East Gulf States, from 27° at Mobile to 33° at St. Marks. West Gulf States, from 17° at Galveston to 38° at Jacksboro, Texas. Ohio valley and Tennessee, from 24° at Memphis and Louisville to 32° at Nashville. Lower Lake region, from 21° at Buffalo to 26° at Cleveland. Upper Lake region, from 17° at Escanaba to 25° at Duluth. Upper Mississippi valley, from 21° at St. Louis to 27° at Dubuque. Breckenridge, 31°. Lower Missouri valley, from 25° at Leavenworth to 35° at Yankton. Indian Territory and plains of Kansas and Nebraska, from 31° at Fort Sill to 44° at North Platte. Rocky Mountain stations, from 31° at Santa Fe to 41° at Denver. California, from 13° at San Francisco to 33° at Visalia.

Frost in Ground.—The following reports show the conditions generally: New England—Cambridge and Westboro, Mass., ground generally free from frost. Lake region—Embarass, Wis., frost out of ground at end of month; Rocky Run, Wis., plowing through month. Middle Atlantic States—Sandy Springs, Md., plowing every day, excepting 1st; Cazenovia, N. Y., farmers plowing through the month; Palermo, N. Y., farmers plowing 28th; Wappinger's Falls and Farmingdale, N. Y., farmers plowing and harrowing; Hector, N. Y., farmers plowing through month; Carlisle, Pa., farmers plowing through month. The Northwest—Vail, Iowa, plowing 18th to 31st; Monticello, Iowa, plowing 30th; Booneboro, Iowa, plowing throughout month; Minneapolis, plowing 21st to 29th; Clear Creek, Neb., plowing 18th to 30th; Pembina, plowing during month.

Ice.—1st, ice reported as having formed at Vicksburg, Galveston, Mobile, Tybee Island and Quitman, Ga., and New London; river frozen over at Toledo; sufficiently strong to bear teams at Bismarck. 2nd, formed at Quitman, Ga.; Mobile, $\frac{1}{2}$ in.; Houston, Fla., $\frac{1}{2}$ in.; Point Pleasant, La., till 3rd; Mesilla, Tex.; Baxter Springs, Kan., 2 $\frac{1}{2}$ in.; Independence, Kan., till 9th; Standish, Me., 3rd, formed at Galveston; Rochester, canal frozen over; Wappinger's Falls, N. Y., 1 $\frac{1}{2}$ in.; Flushing, N. Y., 2 in. 6th, Austin, Tex., formed till 8th; Point Pleasant, La., till 11th. 8th, Wappinger's Falls, N. Y., lake open. 9th, formed at Wilmington, N. C. 10th, formed at West Waterville, Me.; at Brookhaven, Miss., $\frac{1}{2}$ in. 20th, Auburn, N. H., lake closed. 23rd, formed at Sandy Hook. 24th, Cazenovia, N. Y., lake frozen over. 25th, at Pembina, ice in river honey-combed by thaw. 26th, formed at Sandy Hook; Visalia, Cal., $\frac{1}{4}$ th in. 27th, Standish, Me. 29th, Salem, N. J.; Wappinger's Falls, lake frozen over. 30th, Independence, Kan.; near Melissa, and at Austin, Tex. 31st, Wappinger's Falls, 2 to 3 inches thick; West Charlotte, Vt., no ice on lake; Embarrass, Wis., ice disappeared; Alpena Bay and river, free from ice.

PRECIPITATION.

In General.—The general distribution of rain and melted snow for the month is shown on chart No. III. The table in the lower left-hand corner gives the average precipitation in the various districts, for December, for several years, and for the present month. From the Missouri valley to the Upper Lakes and in the South Atlantic and East Gulf States the rainfall has been greater than the average for December; in the remaining districts it has been less.

Special Heavy Rains.—3rd, Clarksville, Tex., 2.75 inches; Galveston, 2.19 in.; Fort Barrancas, Fla., (3rd and 4th,) 5.36 in. 4th, Quitman, Ga., (4th and 5th,) 4.70 in.; Point Pleasant, La., 1.80 in.; St. Mark's, (4th and 5th,) 4.29 in. 5th, Jacksonville, Fla., 1.28 in.; St. Mary's, Ga., (5th and 6th,) 2.00 in.; Cape Lookout, N. C., 1.62 in.; Helvetia, W. Va., 1.25 in.; Cape Hatteras, (5th and 6th,) 3.58 in. 6th, Mt. Washington, N. H., (5th and 6th,) 3.87 in. 7th, Lawrence, Mass., 1.70 in. 9th and 10th, Eagle Pass, Tex., 2.43 in. 12th and 13th, San Antonio, Tex., 1.72 in. 17th and 18th, Fort Sill, Ind. Ter., 3.79 in.; Los Angeles, Cal., 2.21 in. 19th Cape Hatteras, 4.17 in. 20th, San Antonio, Tex., (19th and 20th,) 2.58 in.; New Ulm

Tex., 2.63 in.; Mason, Tex., (19th and 20th,) 3.34 in.; Fort McKavett, Tex., 2.03 in.; Fort Griffin, Tex., (19th and 20th,) 3.90 in.; Fredericksburg, Tex., 3.40 in.; Uvalde, 2.12 in. 21st, Belmont Farm, (Melissa) Tex., (20th and 21st, 3.00 in.; Baton Rouge Bks, La., 1.90 in. 22nd, Dodge City, (19th to 22nd,) 4.30 in.; Olivet, Dak., 1.02 in. 23rd, Quitman, Ga., 1.30 in.; Shreveport, 1.25 in.; Red Bluff, Cal., 2.58 in. 24th, Mt. Ida, Ark., (23rd and 24th,) 2.80 in.; San Diego, (23rd to 25th,) 1.41 in. 26th, Cape Hatteras, 3.72 in.; Kittyhawk, N. C., 4.40 in. 27th, Mason, Tex., 2.12 in.; Uvalde, Tex., (27th and 28th,) 2.10 in. 28th, San Antonio, Tex., (27th and 28th,) 2.18 in.; Belmont Farm, (Melissa) Tex., (27th and 28th,) 5.00 in. 29th, Wilmington, N. C., 2.98 in.; Smithville, N. C., 2.86 in.; Green Springs, Ala., (28th and 29th,) 2.48 in.; Point Pleasant, La., (28th and 29th,) 2.30 in.; Brookhaven, Miss., (28th and 29th,) 1.80 in.; Cape Lookout, N. C., 3.24 in. 30th, Weldon, N. C., 1.25 in.; Goldsboro, N. C., (29th and 30th,) 3.00 in.; Wilmington, N. C., (29th and 30th,) 2.34 in.; Lenoir, N. C., (29th and 30th,) 2.70 in.; Statesville, N. C., (29th and 30th,) 2.20 in.; Cape Henry, Va., 2.73 in. 31st, Accotink, Va., (30th and 31st,) 1.50 in.

Large Monthly Rain-falls.—At Cape Hatteras, N. C., 13.38 in.; Olympia, Wash. Ty., 11.70 in.; Belmont Farm, (near Melissa,) Texas, 9.10 in. (?); Lenoir, N. C., 8.70 in. (?); Kittyhawk, N. C., 8.45 in.; Coleman City, Texas, 8.42 in.; Cape Lookout, N. C., 8.14 in.; Fort Barrancas, (near Pensacola,) Fla., 8.02 in.; St. Marks, Fla., 7.79 in.; San Antonio, Texas, 7.27 in.; Fort Sill, Ind. Ty., 6.97 in.; Mt. Washington, 6.01 in.

Small Monthly Rain-falls.—At Fort Boise, Idaho Ty., 0.01 in.; Carlisle Pa., 0.05 in.; North Argyle, N. Y., 0.07 in.; Colorado Springs, Col., 0.08 in.; Sydney Barracks, Neb., 0.10 in.; South Pueblo, Col., 0.11 in. At Winnemucca, Nev., there was not any precipitation during the month, except a very slight fall on the 1st, which was not sufficient to obtain a measurement.

Floods.—Special heavy floods followed the rains of the 29th, 30th and 31st, accompanying storm No. XV on chart No. I. during its course northeastward from Alabama to southern Virginia. The tide rose higher at Norfolk than since last April, the lower portion of the city becoming flooded, with much loss to property. On the coast of New Jersey heavy northeast gales prevailed during the 30th, producing high tides, washing away from two to four miles of railroad track at Atlantic City.

Hail fell on the 4th at Grand Haven, Mich.; 5th at Vevay, Ind., and McMinnville, Tenn.; 8th and 9th at Embarrass, Wis.; 13th at Gardiner, Me., and New Bedford, Mass.; 28th at Vevay, Ind.; 30th at West Chester, Pa.

Snow.—At Pembina, D. T., there was not sufficient snow on the ground at any time to permit the use of sleds or sleighs.

Depth of snow on ground at close of month.—In New England it varies from 0.25 inch to 10 in.; northern portions of New York and Pennsylvania, from .01 to 0.50 in.; West Virginia, 0.15 in.; Virginia, 12 in. at Wytheville; northern Illinois, 0.20 to 0.50 in.; eastern Kansas, 0.25 to 2 in.; northwestern Iowa, 2.50 in.; Nebraska, 1 to 3 in.; northern Minnesota, 0.25 to 0.50 in.; Dakota, 0.02 to 1.50 in.; New Mexico, at Santa Fe, 1.50 in.; Colorado, 4 to 12 in.; Wyoming, 3 in. at Cheyenne; Montana, Virginia City, some snow on mountains; Utah, Salt Lake City, 3 in.; Nevada, Pioche, 0.05 in.; California, San Geronio, 2 in. On the 31st, at Starkey, N. Y., the ground is reported as very dry, and a scarcity of water.

Rainy Days.—The number of days on which rain or snow has fallen varies as follows: New England, from 1 to 12; Middle Atlantic States, 1 to 19; South Atlantic States, 5 to 14; Lower Lake region, 1 to 22; Tennessee and Ohio valley, 5 to 19; East Gulf States, 5 to 14; West Gulf States, 2 to 16; Upper Lake region, 7 to 17; the Northwest, 5 to 16; Rocky Mountain region, 1 to 9; California, 2 to 8.

Cloudy Days.—The number reported by the voluntary observers is as follows: New England, 0 to 16; Middle States, 5 to 13; South Atlantic States, 6 to 14; East Gulf States, 4 to 15; West Gulf States, 4 to 14; Tennessee and Ohio valley, 9 to 16; Lower Lakes, 3 to 23; Upper Lake region, 5 to 17; the Northwest, 4 to 19; Rocky Mountain region, 1 to 9; California, 7 to 22.

Precipitation from Cloudless Skies.—At Santa Fe, on the 4th, as snow; Bangor, Me., 12th, snow; New Haven, Conn., 13th, rain.

RELATIVE HUMIDITY.

The average relative humidity for the month, ranges about as follows: For New England, 60 to 74; Middle Atlantic States, 59 to 78; South Atlantic States, 69 to 81; East Gulf States, 71 to 78; West Gulf States, 60 to 83; Tennessee and the Ohio valley, 68 to 74; Lower Lake region, 76 to 86; Upper Lake region, 72 to 83; Upper Mississippi valley, 70 to 79; Lower Missouri valley, 70 to 78; California coast, 56 to 73; Sacramento valley, 74 to 75. High stations report the following: Mt. Washington, 78; Pike's Peak, 56; Cheyenne, 48; Denver, 54; Santa Fe, 60; Salt Lake City, 68; Virginia City, 63; Boise City, Idaho, 68; Winnemucca, Nev., 59; Pioche, Nev., 57.

WINDS.

In General.—The prevailing winds, at the Signal Service stations, are shown by the arrows on chart No. II. The maximum hourly velocities have been given in the description of the movements of high and low pressure areas.